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09/487,401	01/19/2000	John R. Shedden	ST9-99-033	3119

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EXAMINER
FLEURANTIN, JEAN B

ART UNIT	PAPER NUMBER
2172	

DATE MAILED: 01/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/487,401	SHEDDEN, JOHN R.	
	Examiner	Art Unit	
	Jean B Fleurantin	2172	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Claims 1-21 are remain pending for examination.

Response to Applicant' Remark

2. Applicant's arguments filed on 11/18/2002 with respect to claims 1-21 have been considered but they are not persuasive.

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanai et al. (US Patent No. 5,544,347) in view of Yanai et al. (US Patent No. 5,742,792) ("Yanai").

As per claims 1, 7 and 13, Yanai teaches a method for enabling improved access to data stored in a log of a computer memory system, said computer memory system having multiple copies of said log comprising a primary log and a secondary log (thus, at least one of the primary and secondary data storage system controllers coordinates the copying of primary data to the secondary data storage system and at least one of the primary and secondary data storage system controllers maintains at least a list of primary data which is to be copied to the secondary data storage device, which is readable as said computer system having multiple copies of said log

comprising a primary log and secondary log) (see col. 2, lines 57-62), each log storing data transactions with a database system stored on said computer memory system as claimed, the method comprises the steps of responding to a process request for access to a log (thus, when a primary host computer requests writing of data to a primary data storage device or asynchronously with the primary host computer requesting the writing of data to the primary data storage system, in which case the remote data copying or mirroring is completely independent of and transparent to the host computer system; which is readable as responding to a process request for access to a log)(see col. 3, lines 5-10). But, Yanai '347 does not explicitly indicate steps of determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a threshold value. However, Yanai '792 implicitly indicates the total number of copied tracks that were counted in step 477 is compared to a threshold, this threshold determines the number of tracks that must be copied while host processing is inhibited the greater the threshold, however the more quickly the active volume can be migrated, therefore the threshold should be set for about the longest tolerable duration of suspended host access to the data storage system, if step 479 finds that the total number of copied tracks that were counted in step 477 is greater than the threshold then execution branches back to step 475 to begin another iteration; which is readable as determining a parameter indicative of demand for access to one of said copies of said log, and the process to another of said copies of the log if said parameter has reached a threshold value, (see cols. 35-36, lines 62-10). Further, in column 37, lines 33 through 39, Yanai '792

teaches if the threshold is exceeded then execution loops back to the step to begin another iteration. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the teachings of Yanai '347 and '792 with determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a threshold value. This modification would allow the teachings of Yanai '347 and '792 to improve the accuracy and the reliability of the active log read I/O balancing for log duplexing, and provide a method automatically maintaining a copy or mirror of data stored at a location geographically remote from the main or primary data storage device; and monitoring repair and service or status access to the storage system (see Yanai '792, cols. 1 and 8, lines 24-27 and 18-20).

As per claims 2, 8 and 14, Yanai teaches a method as claimed, wherein said one of said copies of the log is the primary log (thus, controls storing of primary data received from primary host computer on a primary data storage system, which is equivalent to said copies of the log is the primary log)(see col. 2, lines 39-41).

As per claims 3, 9 and 15, Yanai teaches a method as claimed, wherein said parameter is a count of the processes assigned to the primary log (thus, controller maintaining the list of primary data to be copied updates this list to reflect that the given primary data has been received by and/or copied to the secondary data storage system the primary or secondary data storage system, which is readable as wherein said parameter is a count of the processes assigned to the primary log)(see col. 3, lines 21-24).

As per claims 4, 10 and 16, in addition to the discussion in claim 1, Yanai teaches the step of b) distributes new process assignments to both the primary log and secondary log in an attempt to balance work of the respective logs (thus, the primary and/or secondary data storage system controller maintaining the list of primary data to be copied updates this list to reflect that the given primary data has been received by and/or copied to the secondary data storage system the primary or secondary data storage system controllers and/or the primary and secondary data storage devices may also maintain additional lists in concluding which individual storage locations such as tracks on a disk drive are invalid on any given data storage device which data storage locations are pending a format operation which data storage device is ready to receive data, and whether or not any of the primary or secondary data storage devices are disabled for write operations; which is readable as distributes new process assignments to both the primary log and secondary log in an attempt to balance work of the respective logs)(see col. 3, lines 20-32).

As per claims 5, 11 and 17, in addition to the discussion in claim 1, Yanai further teaches b) alternates new process assignments to the primary log and the secondary log in an attempt to balance work of the respective logs (thus, the primary and/or secondary data storage system controller maintaining the list of primary data to be copied updates this list to reflect that the given primary data has been received by and/or copied to the secondary data storage system the primary or secondary data storage system controllers and/or the primary and secondary data storage devices may also maintain additional lists in concluding which individual storage

locations such as tracks on a disk drive are invalid on any given data storage device which data storage locations are pending a format operation which data storage device is ready to receive data, and whether or not any of the primary or secondary data storage devices are disabled for write operations; which is readable as alternates new process assignments to the primary log and the secondary log in an attempt to balance work of the respective logs)(see col. 3, lines 20-32).

As per claims 6, 12 and 18, Yanai teaches a method as claimed, wherein said parameter is a count of requests that have been queued to the primary log (thus, without intervention from a host computer system, controls storing of primary data received from a primary host computer on a primary data storage system, and additionally controls the copying of the primary data to a secondary data storage system controller which forms part of a secondary data storage system for providing a back-up copy of the primary data on the secondary data storage system which is located in a geographically remote location from the primary data storage system; said parameter is a count of requests that have been queued to the primary log)(see col. 2, lines 39-47).

As per claims 19-21, Yanai teaches a method as claimed, wherein said process request for access to said log comprises a request to read said log (thus, data may be transferred between the primary and secondary data storage system controllers synchronously, when a primary host computer requests writing of data to a primary data storage device or asynchronously with the primary host computer requesting the writing of data to the primary data storage system, in which case the remote data copying or mirroring is completely independent of and transparent to the

host computer system; which is readable as wherein said process request for access to said log comprises a request to read said log)(see col. 3, lines 3-10).

Remark

A. In response to applicant's argument on pages 2 and 3, that the references fail to describe or suggest all limitations of claim 1. The Examiner kindly submits that the Applicant(s) misread the applied references used in the rejection, and the analysis, therefore, is inaccurate. The claim does not capture the essence of the invention as argued in the Applicant(s)' remark page 2-3. Actually the Applicant(s) is/are interpreting the claim narrow using the specification without considering the broad teachings of references used in the rejection. It is respectively submitted that Yanai, '347 and '792 references disclose the claimed limitations as follow: a method for enabling improved access to data stored in a log of a computer memory system, said computer memory system having multiple copies of said log comprising a primary log and a secondary log (thus, at least one of the primary and secondary data storage system controllers coordinates the copying of primary data to the secondary data storage system and at least one of the primary and secondary data storage system controllers maintains at least a list of primary data which is to be copied to the secondary data storage device, which is readable as said computer system having multiple copies of said log comprising a primary log and secondary log)(see col. 2, lines 57-62), each log storing data transactions with a database system stored on said computer memory system as claimed, the method comprises the steps of responding to a process request for access to a log (thus, when a primary host computer requests writing of data to a primary data storage

device or asynchronously with the primary host computer requesting the writing of data to the primary data storage system, in which case the remote data copying or mirroring is completely independent of and transparent to the host computer system; which is readable as responding to a process request for access to a log)(see col. 3, lines 5-10). But, Yanai '347 does not explicitly indicate steps of determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a threshold value. However, Yanai '792 implicitly indicates the total number of copied tracks that were counted in step 477 is compared to a threshold, this threshold determines the number of tracks that must be copied while host processing is inhibited the greater the threshold, however the more quickly the active volume can be migrated, therefore the threshold should be set for about the longest tolerable duration of suspended host access to the data storage system, if step 479 finds that the total number of copied tracks that were counted in step 477 is greater than the threshold then execution branches back to step 475 to begin another iteration; which is readable as determining a parameter indicative of demand for access to one of said copies of said log, and the process to another of said copies of the log if said parameter has reached a threshold value, (see cols. 35-36, lines 62-10). Further, in columns 3 and 37, lines 20-29 and 33-39, Yanai '792 teaches for each volume the operating modes include a synchronous mode a semi synchronous mode an adaptive copy write pending mode and an adaptive copy disk mode the operating mode for each logical volume can be specified to best suit the purposes of the desired remote mirroring the particular application using the volume and the particular use of data store

on the volume, and if the threshold is exceeded then execution loops back to the step to begin another iteration. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to modify the teachings of Yanai '347 and '792 with determining a parameter indicative of demand for access to one of said copies of said log, and assigning the process to another of said copies of the log if said parameter has reached a threshold value. This modification would allow the teachings of Yanai '347 and '792 to improve the accuracy and the reliability of the active log read I/O balancing for log duplexing, and provide a method automatically maintaining a copy or mirror of data stored at a location geographically remote from the main or primary data storage device; and monitoring repair and service or status access to the storage system (see Yanai '792 reference cols. 1 and 8, lines 24-27 and 18-20). Moreover, Applicant(s) cannot rely on the specification to impart the claimed limitations. Applicant(s) is/are further reminder of the clear difference between reading the claims in light of the specification as allowed by 35 U.S.C. 112, USPQ 530 (CCPA 1957).

Although the claims are interpreted in light of the specification, the limitations from the specification are not read into the claims. See In re Van Genus, 988 F.D 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

B. On page 4, Applicant stated that "such copying of data is not descriptive or suggestive of assigning a process to another copy of a log if a parameter has reached a threshold value, as recited in claim 1." Examiner disagrees with the present statement. It is noted, however, Yanai ('792) includes the use of tracking when the maximum allowable write pending is reached, and a

preferred arrangement write operations are suspended by defaulting to a predetermined one of the synchronous or asynchronous modes, (see col. 3, lines 53-65). Further, in column 36, lines 7 through 10, Yanai ('792) teaches that the total number of copied tracks that were counted in step 477 is greater than the threshold, then execution branches back to step 475 to begin another iteration. This implication discloses the use of assigning a process to another copy of a log if a parameter has reached a threshold value. Thus, the aforementioned statement is moot.

C. In response to applicant's argument on page 4, that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, data storage device is ready to receive data and whether or not any of the primary or secondary data storage devices are disabled for write operations, see Yanai '347, col. 3, lines 30-32.

D. In response to applicant's argument on page 5, the references do not describe or suggest "distributing new process assignments to both primary log and the secondary log in an attempt in an attempt to balance work of the respective logs." Examiner disagrees with the present statement. It is noted, however, Yanai ('792)'s reference includes data elements of volumes such as tracks or records are scanned for data elements that are invalid on the secondary (R2) volume,

the next iteration copies from the primary (R1) volume to the secondary (R2) volume data elements having been invalidated by writes from the host during the previous iteration, a count of the number of data elements transferred during each iteration or a count of the invalid data elements in the secondary volume, is kept in order to monitor convergence toward synchronization of the primary (R1) and secondary (R2) volumes, host processing of the primary volume is suspended for a last iteration to obtain complete synchronization, (see col. 5, lines 16-34).

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

5. Any inquiry concerning this communication from examiner should be directed to Jean Bolte Fleurantin at (703) 308-6718. The examiner can normally be reached on Monday through Friday from 7:30 A.M. to 6:00 P.M.

If any attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Mrs. KIM VU can be reached at **(703) 305-8449.** The FAX phone numbers for the Group 2100 Customer Service Center are: ***After Final* (703) 746-7238**, ***Official* (703) 746-7239**, and ***Non-Official (703) 746-7240***. NOTE: Documents transmitted by facsimile will be entered as official documents on the file wrapper unless clearly marked "***DRAFT***".

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 2100 Customer Service Center receptionist whose telephone numbers are **(703) 306-5631, (703) 306-5632, (703) 306-5633**.

Jean Bolte Fleurantin

January 23, 2003

JBF/

JEAN M. CORRIELUS
PRIMARY EXAMINER